

# SARS-CoV-2 Confirm

Primers/Probes Mix for SARS-CoV-2 detection by RT-qPCR (includes positive control)

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## PRODUCT INFORMATION

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**For Research Use Only!**

### INDICATION

**SARS-CoV-2 Confirm** is a RT-qPCR detection system for the RNA of the novel Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2, initially named 2019-nCoV). Combined with our universal one-step RT-PCR enzyme mix ConviFlex™ RT-Taq Mix (Cat. No. 192-0025/-0100/-0250), this primer/probe system allows qualitative detection of the novel coronavirus SARS-CoV-2 RNA in extracted samples.

This product is designed on the basis of SARS-CoV-2 detection assays and sequences (both primers and probe) indicated by the WHO reference diagnostic laboratory in Germany (<https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance/laboratory-guidance>, Ref. 1).

### PRINCIPLE OF THE METHOD

**SARS-CoV-2 Confirm** contains lyophilized primers/probe, which specifically amplify the RNA-dependent RNA polymerase (RdRp) gene of SARS-CoV-2. For the specific virus-targeting sequences of the primers and probe, please see Refs. 1, 2.

The RNA of other SARS-CoV viruses are not detected by these primers/probe (Refs. 1, 2), which can be qualitatively analyzed by RT-qPCR with our **CoV Screen** assay (Cat. No. 271-1100).

This product can be used in combination with the universal one-step RT-PCR enzyme mix ConviFlex™ RT-Taq Mix (Cat. No. 192-0025/-0100/-0250) for qualitative detection of SARS-CoV-2 RNA.

As starting material, the assay requires extracted viral RNA.

The amplification of the specific SARS-CoV-2 target (RdRp) is detected in the FAM™ channel. The mix includes also an amplification system for human RNase P gene, detected in the ROX™ channel, when human samples are employed and adequately prepared (process control). Included is also a lyophilized Positive Control RNA containing a synthetic RNA sequence of the Wuhan-specific virus strain.

## REAGENTS

Each kit contains reagents and components for 100 reactions (100 reactions / vial). The expiry date of the unopened package is marked on the package label. The kit components should be stored at +2 - +8 °C, and after rehydration at ≤ -18 °C. Protect the 2019-nCoV Mix from light. We recommend storing the rehydrated components in aliquots to avoid multiple freeze-thaw cycles.

Component	Quantity	Cap color
	100 Reactions Cat. No. 271-2100	
2019-nCoV Mix	1 vial, lyophilized	orange
Positive Control RNA	1 vial, lyophilized	green
PCR grade Water	1 vial	white

## USER-SUPPLIED CONSUMABLES AND EQUIPMENT

The kit contains some of the components required for RT-PCR amplification. Additional consumables and equipment are supplied by the user:

- ConviFlex™ RT-Taq Mix (Cat. No. 192-0025/-0100/-0250). Please note that ConviFlex™ RT-Taq Mix is a lyophilized enzyme mix containing a reverse transcriptase and a Taq Polymerase. Resuspend as indicated in the Instructions for Use of ConviFlex™ RT Taq Mix.
- qPCR thermocycler and microcentrifuge
- Suitable qPCR reaction tubes (DNase- and RNase-free)
- Pipettes with corresponding filter tips (DNase- and RNase-free)
- User-specific RNA extracts or samples. Optional for sample preparation: ExtractNow™ Virus RNA Kit Cat. No. 611-1010/-1050/-1250 or ExtractNow™ Virus RNA Swab Kit Cat. No. 611-2250.

## PRECAUTIONS

SARS-CoV-2 Confirm is intended for research use only. SARS-CoV-2 Confirm is not intended for human diagnostics. SARS-CoV-2 Confirm should be used by trained laboratory staff only.

All samples should be handled with all due care and attention, according to the specimen type. Always wear appropriate protective clothing and disposable gloves. Please follow the current recommendations of the WHO on sample handling.

This kit does not contain hazardous substances. Remnants can be discarded according to local regulations.

## ADDITIONAL NOTES

- These instructions must be understood to successfully use the SARS-CoV-2 Confirm. The reagents supplied should not be mixed with reagents from different lots but used as an integral unit. The reagents of the kit must not be used beyond shelf life.
- Follow the exact protocol when preparing RT-qPCR reactions with SARS-CoV-2 Confirm. Deviations may affect the test method and results.
- We recommend including controls on a regular basis to monitor the reliability of your results. Set up at least one positive, one negative extraction control sample, and one non-template control (NTC) in each PCR, in duplicates. The controls must be processed in the same manner as the test samples. You may want to include other lab-specific control samples such as high, median, and low RNA levels.
- To avoid DNA and RNA cross-contaminations during the procedure, we recommend performing the RT-PCR under RNA- and DNA-free conditions, and according to the specimen type. The degradation of the extracted RNA greatly limits the performance of RT-PCR reactions. Minimizing the number of freeze-thaw cycles of RNA samples or RNase contaminations helps preventing RNA degradation. Please ensure high-quality intact RNA is used for the test.

## PROCEDURE - STEP BY STEP

### 1. Reagent preparation

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1.1.	2019-nCoV Mix	orange cap	Spin down for 5 sec at maximum speed
	Positive Control RNA	green cap	
1.2.	2019-nCoV Mix	orange cap	Add 525 $\mu$ l PCR grade Water (white cap).
1.3.	Positive Control RNA	green cap	Add 105 $\mu$ l PCR grade Water (white cap).
1.4.	2019-nCoV Mix	orange cap	Incubate at room temperature for 5 min, vortex briefly and spin down for 5 sec
	Positive Control RNA	green cap	

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### 2. RT-PCR reaction mix preparation

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	Pipetting scheme:	
	For 1 reaction	For 100 reactions
2.1.	ConviFlex™ RT-Taq Mix (Cat. No. 192-OXXX)	10 $\mu$ l 1000 $\mu$ l
	2019-nCoV Mix	5 $\mu$ l 500 $\mu$ l
	<u>Important:</u> ConviFlex™ RT-Taq Mix has to be purchased separately. Resuspend the ConviFlex™ RT-Taq Mix as indicated in the corresponding “Instructions for Use”.	
2.2.	Vortex briefly and spin down for 5 sec.	
2.3.	Aliquot 15 $\mu$ l of master mix to each PCR reaction tube.	
2.4.	<b>Samples:</b> Add 5 $\mu$ l of RNA template.	
2.5.	<b>Negative Controls:</b> Add 5 $\mu$ l elution buffer from RNA extraction kit as negative control for extraction (NEC). Add 5 $\mu$ l PCR grade Water as No-Template Control (NTC).	
2.6.	<b>Positive Control:</b> Add 5 $\mu$ l Positive Control RNA.	
2.7.	Close PCR tubes tightly and spin down briefly.	
2.8.	Place PCR tubes in the cycler and close the lid tightly.	
	Program the cycler or load a stored cycler program:	
2.9.	1 cycle	50 °C for 20 min
	1 cycle	95 °C for 10 min
	45 cycles	95 °C for 15 sec
		58 °C for 30 sec
2.10.	Start the program.	

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## DATA INTERPRETATION

**Important:** The table below represents a general guidance on data interpretation, which apply only to extracted human samples. For such samples, the absence of ROX™ signal indicates inadequate extraction or sample collection. Other sample types and controls might require different considerations on the results.

**Positive Control:** in case of negative results in the FAM™ channel, check the rehydration protocol and storage, and repeat PCR.

**Negative Controls:** in case of positive results in the FAM™ or ROX™ channel, consider contaminations as a possible cause and design experiments to verify that hypothesis.

FAM™ channel	ROX™ channel	Interpretation
Positive	Positive	Detection of SARS-CoV-2 RNA
Positive	Negative	Detection of SARS-CoV-2 RNA
Negative	Positive	No detection of SARS-CoV-2 RNA
Negative	Negative	Invalid sample preparation procedure

## REFERENCES

1. Corman VM, Bleicker T, Brünink S, Schneider J, Drosten C. Diagnostic detection of 2019-nCoV by real-time RT-PCR. [https://www.who.int/docs/default-source/coronaviruse/protocol-v2-1.pdf?sfvrsn=a9ef618c\\_2](https://www.who.int/docs/default-source/coronaviruse/protocol-v2-1.pdf?sfvrsn=a9ef618c_2)
2. Corman VM et al.. Detection of 2019 novel coronavirus (2019-nCoV) by real-time RT-PCR. Euro Surveill. 2020 25(3). doi: 10.2807/1560-7917.ES.2020.25.3.2000045.

## APPENDIX

### *Limited Product Warranty*

This warranty limits our liability for replacement of this product. No warranties of any kind, express or implied, including, without limitation, implied warranties of merchantability or fitness for a particular purpose, are provided. Minerva Biolabs shall have no liability for any direct, indirect, consequential, or incidental damages arising from the use, the results of use, or the inability to use this product.

### *Trademarks*

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## RELATED PRODUCTS

192-0025/-0100/-0250	ConviFlex™ RT-Taq Mix (25 reactions / vial)	25/100/250 Reactions
611-1010/-0050/-1250	ExtractNow™ Virus RNA Kit	10/50/250 Extractions
611-2250	ExtractNow™ Virus RNA Swab Kit	250 Extractions
271-1100	CoV Screen (without ConviFlex™ RT-Taq Mix)	100 Reactions

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Germany:  
**Minerva Biolabs GmbH**  
Schkopauer Ring 13 | 12681 Berlin | Germany  
Tel.: +49-30-2000437-0 | Fax: +49-30-2000437-9  
E-mail: [order@minerva-biolabs.com](mailto:order@minerva-biolabs.com)  
Internet: [www.minerva-biolabs.com](http://www.minerva-biolabs.com)

USA / Canada:  
**Minerva Biolabs Inc.**  
1 Jill Ct., Building 16, Unit 10  
Hillsborough | NJ 08844 | USA  
Phone: 1-908-524-4661  
[order@minervabiolabs.us](mailto:order@minervabiolabs.us) | [www.minervabiolabs.us](http://www.minervabiolabs.us)